

REMARKS/ARGUMENTS

At the outset, Applicants thank Examiner Ferguson for his helpful comments explaining the rejection of the Outstanding Office Action.

Claims 1, 18, and 25 are amended. Claims 1-3, 6, 8, 18, 20-27, 29, and 31-43 remain pending. Support for the amendment above is found at page 3, lines 12-13, of the originally filed specification. No new matter is believed to be introduced by the above amendment.

The rejection of Claims -3, 6, 8, 18, 20-27, 29, and 31-43 under 35 U.S.C. §103 over US Patent No. 5,061,545 to Li (US'545) in view of US Patent No. 3,404,112 to Lindemann (US'112) is believed to be obviated by the amendment above combined with the remarks below.

Li, at best, discloses a composite (See Abstract of Li) used to make ballistic and anti-ballistic articles containing a unidirectional fibrous web (See Column 2, lines 10-14 of Li) impregnated with a matrix composition (see Abstract) in a manner that provides a non-uniform surface of protrusions and/or impressions (See Column 4, lines 23-24 of Li). Li fails to disclose that the unidirectional fibrous web is impregnated in a manner that provides a uniform surface. In fact, Li explicitly states:

“The fibrous web of the present invention maintains thin section (38) and thick section (40) during processing. The area of the protrusion (30) should be large enough *so that the impression (38) remains*” (See Column 4, lines 49-53, of Li, emphasis added).

Accordingly, Li clearly teaches that the surface impregnated with its matrix is not uniform because such surface has a pattern of protrusions and impressions. Further, Li clearly characterizes the matrix thick areas of protrusion are applied to the web such that:

*“the thick areas which provide the integrity of the polymeric layer are a continuous area along the surface of the fibrous/polymeric composite.”* (See Column 2, lines 59-61, of Li, emphasis added).

Accordingly, Li clearly teaches the impregnated matrix is continuous.

Lindemann discloses, at best, a paper or paperboard that may be calendared and printed (See Abstract of Lindemann and Column 1, lines 40-45 of Lindemann). Although the Office alleges that Lindemann discloses that the paper or paperboard contains an impregnated coating, Applicants have not found any evidence of impregnation disclosed by Lindemann, especially within the columns and lines cited by the Office in the outstanding Office Action to support the Office's allegations. Accordingly, Applicants respectfully submit that Lindemann fails to disclose impregnation. Lindemann discloses that the polymer is a coating and that the coating must:

*“flow smoothly and evenly so that it can be applied to the cellulosic web at sufficiently high speeds to be economical in ordinary coating processes”* (See Column 1, lines 46-49, of Lindemann, emphasis added).

Accordingly, Lindemann clearly discloses that the terpolymers are coated on the web, but also that the terpolymers are done so in a manner to provide a smooth surface having

terpolymer evenly distributed over its entirety. In fact, Lindemann discloses that such smoothness and evenness is required in order for the paper or paperboard to have acceptable surface characteristics such as printability (See Column 1, line 45 and lines 52-56 of Lindemann).

In direct contrast to Li and Lindemann, the claimed invention relates to a crack-resistant printing paper or board. The paper or board contains a polymer material impregnated into a cellulose fiber network web in a manner such that the polymer material is discontinuous and the surface of the paper or board is uniform. The Office bears the burden of establishing a *prima facie* case of obviousness by demonstrating that the combined references, Li and Lindemann, disclose and/or suggest all limitations of the claimed invention. However, before references may be combined, the Office may demonstrate that the both references, Li and Lindemann, are: A) analogous art i) to the claimed invention and ii) to one another; and B) there is motivation to combine Li and Lindemann. Applicants respectfully submit that the Office has failed to bear its burden of setting forth a *prima facie* case of obviousness of the claimed invention in view of Li and Lindemann for the following reasons:

- 1) Li fail to disclose or suggest that the polymer impregnated into its web is discontinuous;
- 2) Li fails to disclose or suggest that the polymer is impregnated into the web in a manner that provides for a uniform surface;
- 3) Lindemann fails to provide what Li lacks in its disclosure;
- 4) Li is non-analogous art to the claimed invention; and

5) There is no motivation to combine Li with Lindemann.

Regarding 1) above, Li fail to disclose or suggest that the polymer impregnated into its web is discontinuous. In contrast, Li clearly discloses (as mentioned above) that its composite is made by impregnating the web in a manner that provides for a continuous matrix (See Column 2, lines 59-61, of Li, emphasis added). This is the exact opposite of the claimed invention. Applicants have reviewed the outstanding Office Action and note that the Office has failed to provide any citation that the Office relies upon within Li to support the Office's allegation that Li discloses that matrix is discontinuous. If the Office maintains its rejection, Applicants respectfully request the Office to provide specific citations within Li that disclose the matrix as being discontinuous.

Regarding 2) above, Li fails to disclose or suggest that the polymer is impregnated into the web in a manner that provides for a uniform surface. In contrast, Li clearly discloses that its composite is made by impregnating the web in a manner that provides for a non-uniform surface. As discussed above, Li clearly discloses that a non-uniform surface of protrusions and impressions is required. Moreover, Li states:

"The fibrous polymeric composite made by the process of the present invention maintains its integrity yet results in a composite which has a greater volume ratio of fiber to polymer, than a composite made from a fibrous web in a matrix layer having a uniform thickness over the area of the web." (See Column 2, lines 63-68, of Li).

Accordingly, Li teaches that the non-uniform surface of the composite having a continuous matrix is required in order for the composite to perform according to the invention disclosed

in Li. Li not only fails to disclose, but also clearly teaches away from, a uniform surface having a discontinuous impregnated polymer thereon; and therefore, clearly teaches away from the claimed invention.

Regarding 3) above, Lindemann fails to provide what Li lacks in its disclosure. Lindemann fails to disclose or suggest a web of fibers impregnated with polymer in a manner that provides a uniform surface of the continuous polymer. In contrast, Lindemann merely discloses a paper or paperboard coated with a terpolymer and then calendared such that the resultant coated paper or paperboard has improved and acceptable surface characteristics such as smoothness, gloss and printability. First, Applicants can not find any disclosure in Lindemann related to impregnating a web. Second, Applicants can not find any disclosure in Lindemann related to providing a discontinuous polymer layer. In fact, Lindemann teaches away from it by teaching that the coating is applied smooth and evenly (See Column 1, lines 46-49, of Lindemann, emphasis added). In fact, a discontinuous layer of polymer is the exact opposite of what Lindemann teaches. Accordingly, not only does Lindemann fail to provide what Li lacks, Lindemann also teaches away from a discontinuous layer; and therefore, teaches away from the claimed invention.

In light of the above, Li and Lindemann (if combined) do not disclose or suggest the all limitations of the claimed invention. In fact, both Li and Lindemann teach the criticality of a continuous layer to improve aspects of their technology as related to conventional aspects of their respective technologies. Accordingly, no combination of Li with Lindemann provides the Office with disclosures that are sufficient to support the Office's *prima facie* case of

obviousness. For these reasons, Applicants respectfully request withdrawal of these grounds for rejection.

All of the above arguments are assuming, *in arguendo*, that both Li and Lindemann are references in technical fields analogous to the claimed invention. The Office must bear its burden of establishing a *prima facie* case of obviousness based upon analogous art. Regarding 4) above, Li is non-analogous art to the claimed invention. Li is a patent that relates to impregnating a unidirectional web with a matrix in a manner that provides a very uneven and non-uniform surface to a composite having superior strength in the field of ballistic and anti-ballistic products. Li has absolutely nothing to do with a paper or board, much less a crack-resistant printing paper or board. A web of a paper is not unidirectional but random. A paper or board has no ballistic or antiballistic use. Further, due to the unevenness and non-uniformity of Li's composite, Li's composite can not possibly be used in the printing market. Thus, the feature of Li's composite that Li states is critical is the exact feature which destroys its analogous application to a printing paper or board. Accordingly, Applicants respectfully submit that the Office can not possibly rely on the Li since Li is clearly relates to non-analogous technical fields. More importantly, that which is valued within the technical field of Li destroys its applicability in the field of making printing paper or board. In light of the above, Applicants respectfully request the Office to withdraw all rejections based (in part or in whole) upon Li.

Moreover, it is clear that Li is non-analogous to the claimed invention because the Office admits the failures of Li and relies upon Lindemann to disclose paper or board materials. Then, the Office uses the combination of Li and Lindemann to support its

rejection. However, Applicants respectfully submit that Li and Lindemann are not combinable because Li and Lindemann relate to non-analogous technical fields. As discussed above, Li relates to impregnating a unidirectional web with a matrix in a manner that provides a very uneven and non-uniform surface to a composite having superior strength in the field of ballistic and anti-ballistic products. In contrast, Lindemann relates to coating a random distribution of a papermaking fiber web in a manner to create an even, smooth, printable paper or paperboard. These references are clearly non-analogous.

Regarding 5) above, the Office alleged technical field has completely expanded the appropriate technical field to include any reference that discloses impregnating a fiber web with a polymer. Applicants disagree with the Office's definition of the technical field because it would include references, such as Li, that have nothing to do with paper or paperboard making. Even if the scope of the Office's alleged technical field is correct, the combination of Li and Lindemann is still inappropriate because Lindemann fails to fall within the scope of the Office's alleged technical field. Lindemann relates to a polymer coated, not impregnated, on a random distribution of paper or board-making fibers. Accordingly, even Lindemann does not fall within the Office's definition of the related technical field. Further, even if the Office maintains that Li and Lindemann are within analogous technical fields, Applicants respectfully submit that Li and Lindemann can not be combined because Li and Lindemann teach away from such a combination. Li teaches that the coating must be discontinuous, while Lindemann has a continuous coating. Li teaches that the matrix must be impregnated such that an uneven application occurs, while Lindemann teaches that an even application of its polymer coating is essential to its resultant printing paper or printing board. Li teaches that the impregnated matrix must create protrusions and impressions in order to

achieve the improved qualities over conventional ballistic and anti-ballistic composite materials, while Lindemann clearly teaches that the polymer coating must be applied to produce a smooth surface so as to increase surface properties such as smoothness, gloss, and printability.

In light of the above, a skilled artisan reading Li would not be motivated to modify Li in a manner that would result in a web having an impregnated discontinuous matrix. Further, the skilled artisan would not be motivated to apply the matrix evenly to create a uniformly smooth surface. To do so, would tear at the very fabric of Li's disclosure, rendering it inoperable. Li teaches the skilled artisan away from making such modifications; and, the skilled artisan would have absolutely no expectation of success by making such modifications to Li. Accordingly, the skilled artisan would have no motivation with any expectation of success to modify Li according to the teachings of Lindemann.

Further in light of the above, a skilled artisan reading Lindemann would not be motivated to modify Lindemann in a manner that would result the polymer coating being applied to the web unevenly to create a non-uniform rough surface containing protrusions and impressions thereon. To do so, would tear at the very fabric of Lindemann's disclosure, rendering it inoperable. Lindemann teaches the skilled artisan away from making such modifications; and, the skilled artisan would have absolutely no expectation of success by making such modifications to Lindemann. Accordingly, the skilled artisan would have no motivation with any expectation of success to modify Lindemann according to the teachings of Li.

Because Li is non-analogous to the claimed invention and the technical field of Lindemann and because Li and Lindemann teach away from modifying one in light of the other, Applicants respectfully submit that there is no motivation to combine Li and Lindemann. Thus, Applicants respectfully submit that the office has failed to provide a *prima facie* case of obviousness. Accordingly, for these reasons alone, Applicants respectfully submit withdrawal of this ground of rejection.

To review and in summary, *prima facie* case of obviousness, Applicants respectfully submit that the Office has failed to bear its burden of setting forth a *prima facie* case of obviousness of the claimed invention in view of Li and Lindemann for the following reasons:


- 6) Li fail to disclose or suggest that the polymer impregnated into its web is discontinuous;
- 7) Li fails to disclose or suggest that the polymer is impregnated into the web in a manner that provides for a uniform surface;
- 8) Lindemann fails to provide what Li lacks in its disclosure;
- 9) Li is non-analogous art to the claimed invention; and
- 10) There is no motivation to combine Li with Lindemann.

For all of the above reasons, Applicants respectfully request that the above-mentioned rejections be withdrawn.

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Applicants respectfully submit that the present application is now in condition for allowance. Favorable reconsideration is respectfully requested. Should anything further be required to place this application in condition for allowance, the Examiner is requested to contact below-signed by telephone.

Please charge the amount of **\$1050.00** required for the request for extension of time to our Deposit Account No. 09-0525. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R. 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 09-0525. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time.

<b>Correspondence Client Number:</b> 01726  (513) 248-6736 (phone) (513) 248-6445 (fax)	<b>Respectfully Submitted,</b> 	
	<b>Thomas W. Barnes III, Ph.D.</b>	
	<b>Registration</b> No.	<b>52,595</b>